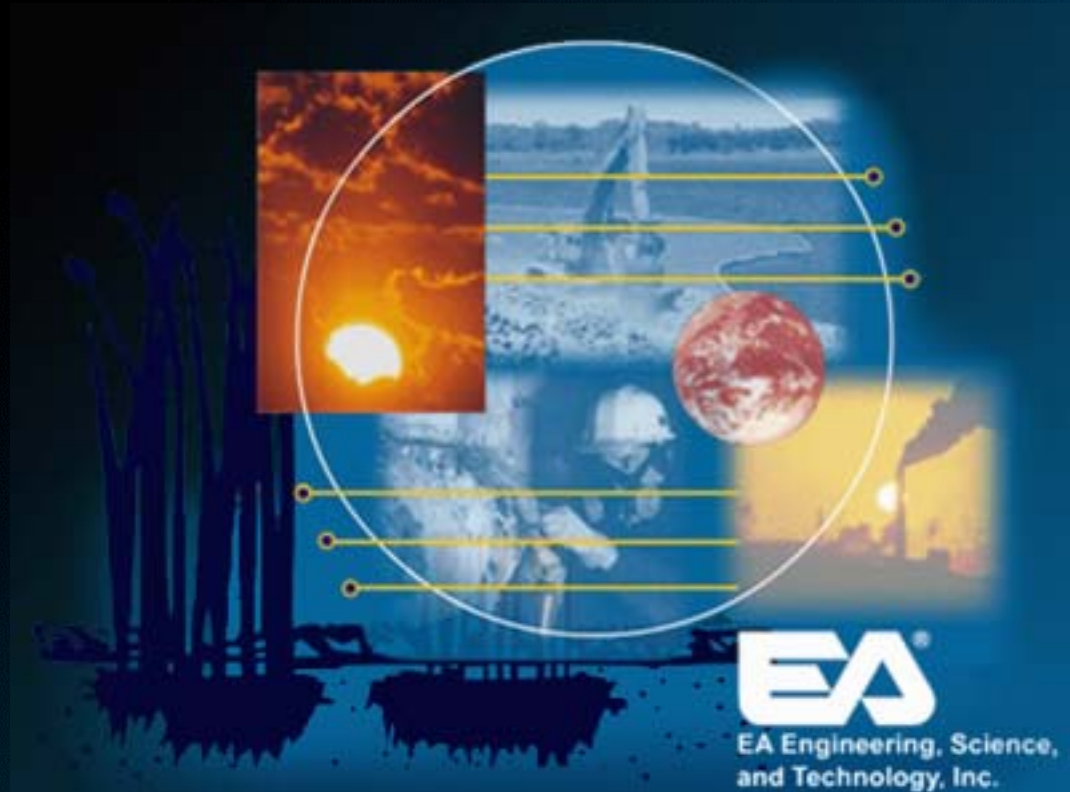


TMDL for Dissolved Solids in Colorado River



**Colorado River Below E.V. Spence Reservoir
(Segment 1426) Stakeholders' Meeting
December 10, 2003**



Why conduct Total Maximum Daily Load (TMDL) study on Colorado River?

- **Colorado River does not meet water quality standards, is designated as “impaired” and was placed on the CWA Section 303(d) list.**
- **All 303(d) listed water bodies are required to have TMDLs that will achieve water quality standards.**
- **Water quality standards are developed to protect aquatic life and other beneficial uses.**



TCEQ Chapter 307.7

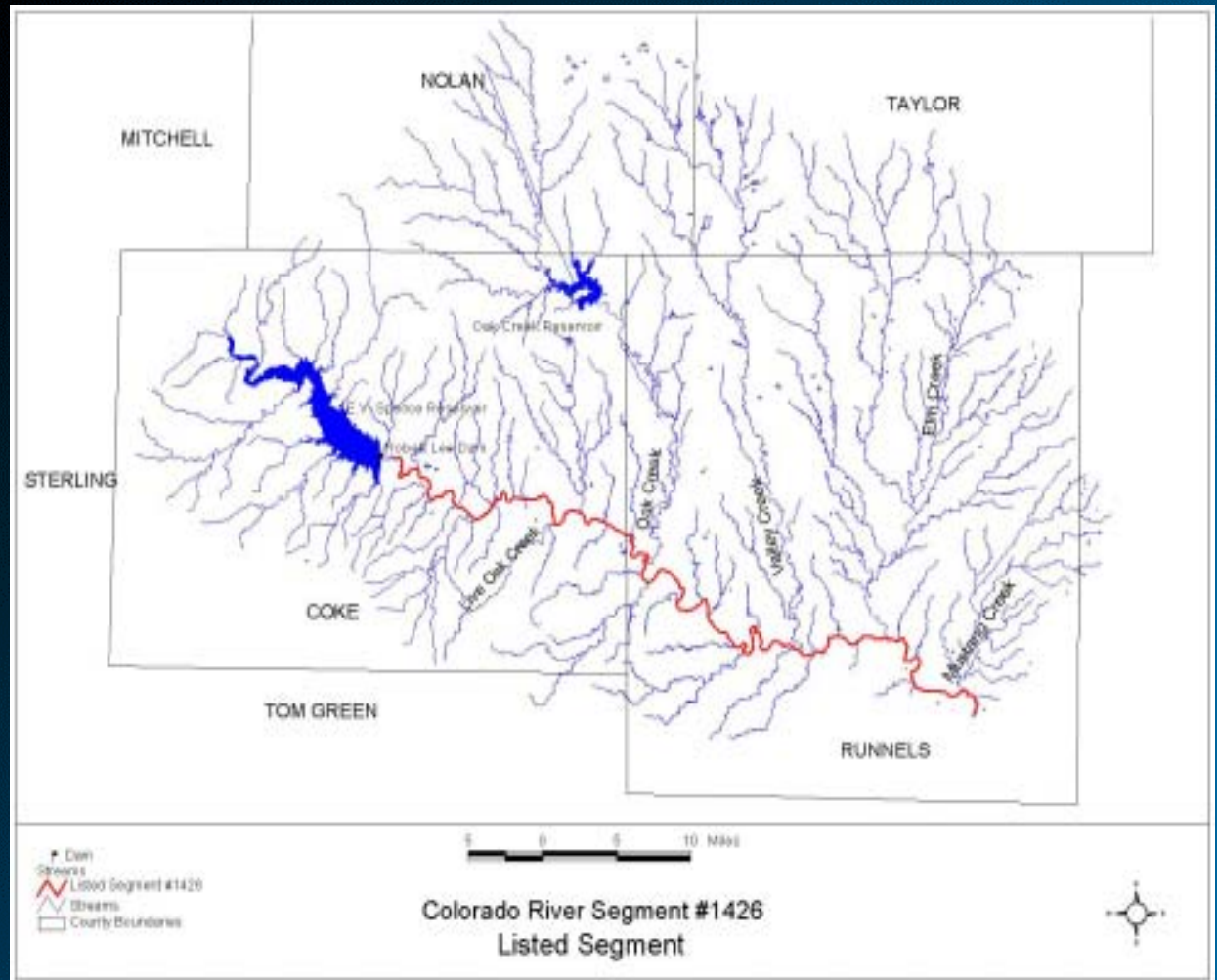
Colorado River Below E.V. Spence

Site-specific water quality criteria

<u>Segment</u>	Cl^{-1} <u>mg/L</u>	SO_4^{-2} <u>mg/L</u>	TDS <u>mg/L</u>
1426 Colorado River below EVS	610	980	2,000

Segment 1426 - Colorado River

- Placed on the TCEQ's 2000 Clean Water Act (CWA) Section §303(d) list because total dissolved solids exceeded 2,000 mg/L.





Why are Chloride and TDS Targeted in this TMDL?

- Chloride in high concentrations can have adverse effects on water taste, cause health problems in humans, and deterioration of plumbing.
- TDS can be toxic to freshwater aquatic life.



Water Quality Parameters

- **Water quality parameters:**
 - Chloride
 - Sulfate
 - Total Dissolved Solids (TDS)
- **Field parameters**
 - pH
 - Dissolved Oxygen (D.O.)
 - Specific Conductivity
 - Water Temperature
 - Salinity



Monitoring Plan and Monitoring Schedule - Goals

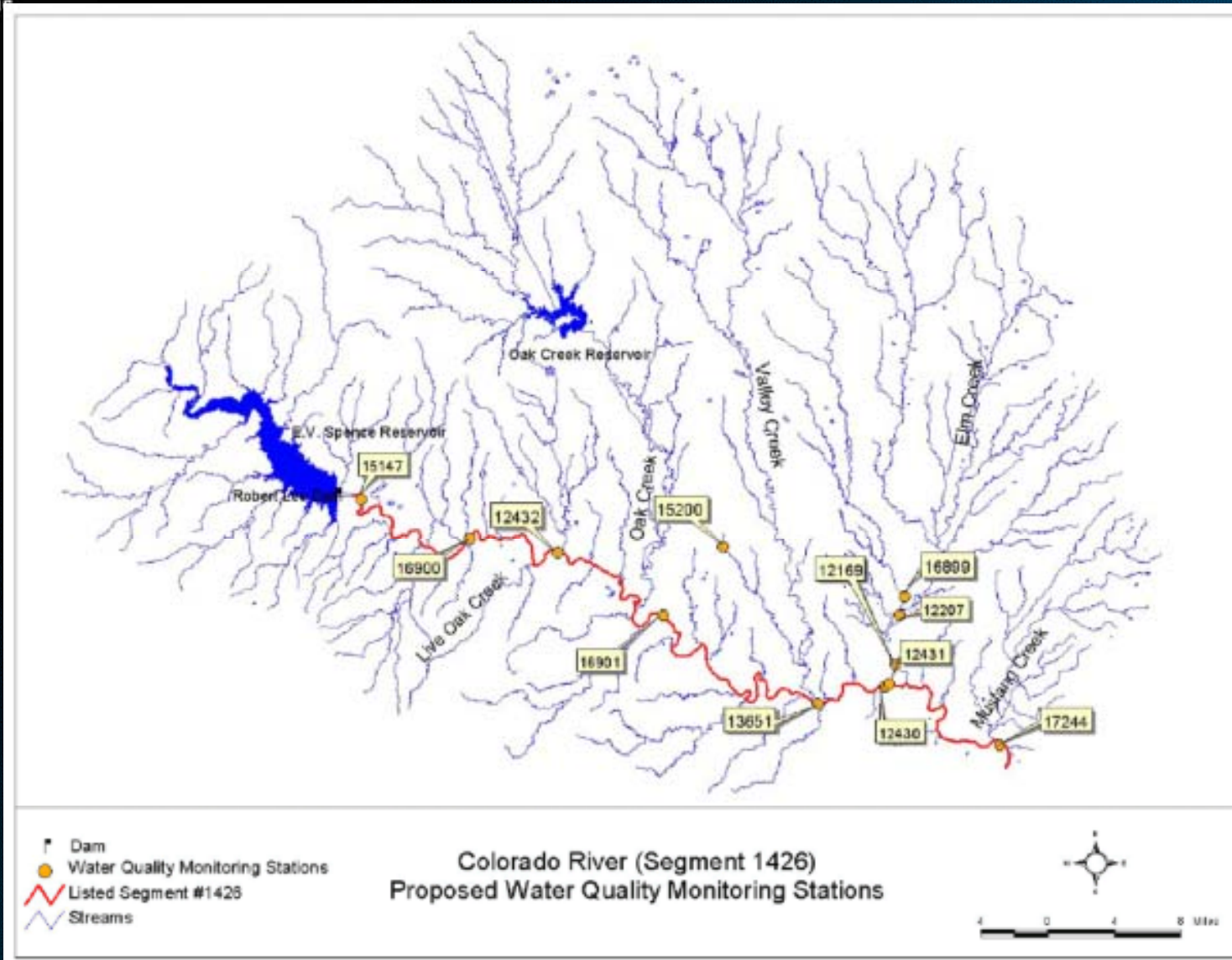
- Establish procedures for data collection and analysis,
- Collect water samples to identify potential sources,
- Coordinate data collection and interpretation with the TCEQ, and
- Provide sufficient data for TMDL analysis



Monitoring Plan and Monitoring Schedule

- **Sampling and Analysis Plan (SAP) was finalized in October 2002.**
- **Monitoring began in January 2003 upon the approval of the Quality Assurance Project Plan (QAPP) in October 2002.**
- **Water quality monitoring included:**
 - **Chemical monitoring (under range of stream flows)**
 - **Streamflow monitoring**
 - **Wet weather monitoring (runoff to segment)**
 - **Intensive monitoring (point source inputs)**

Monitoring Stations



Water Quality Monitoring - Photos



Station 15147 - Algae in water.

Water Quality Monitoring - Photos



**Station 12207 - Stream flow
monitoring**



**Station 12169 - Water quality
monitoring**

Water Quality Monitoring - Photos



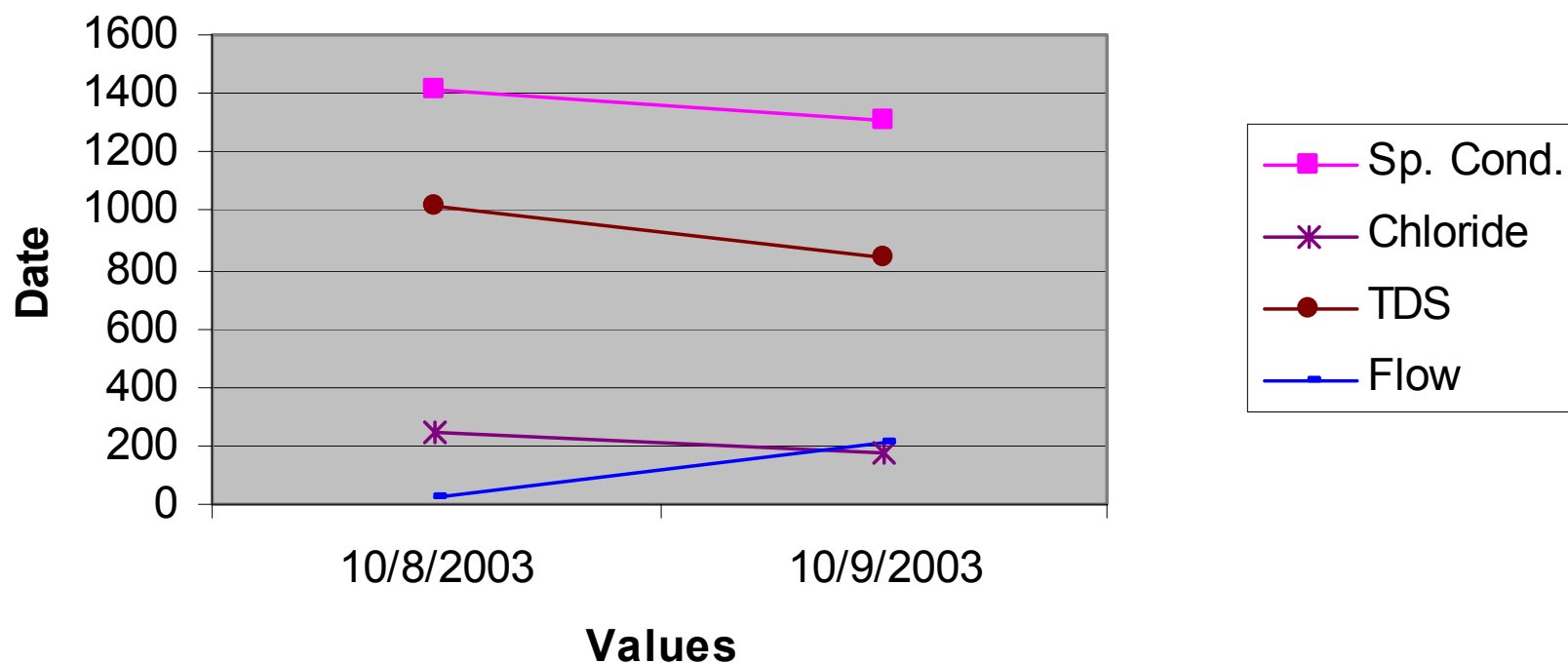
Station 12432 - Wet weather high flow



Station 12431 - Dry weather monitoring

Summary Water Quality data for Colorado River

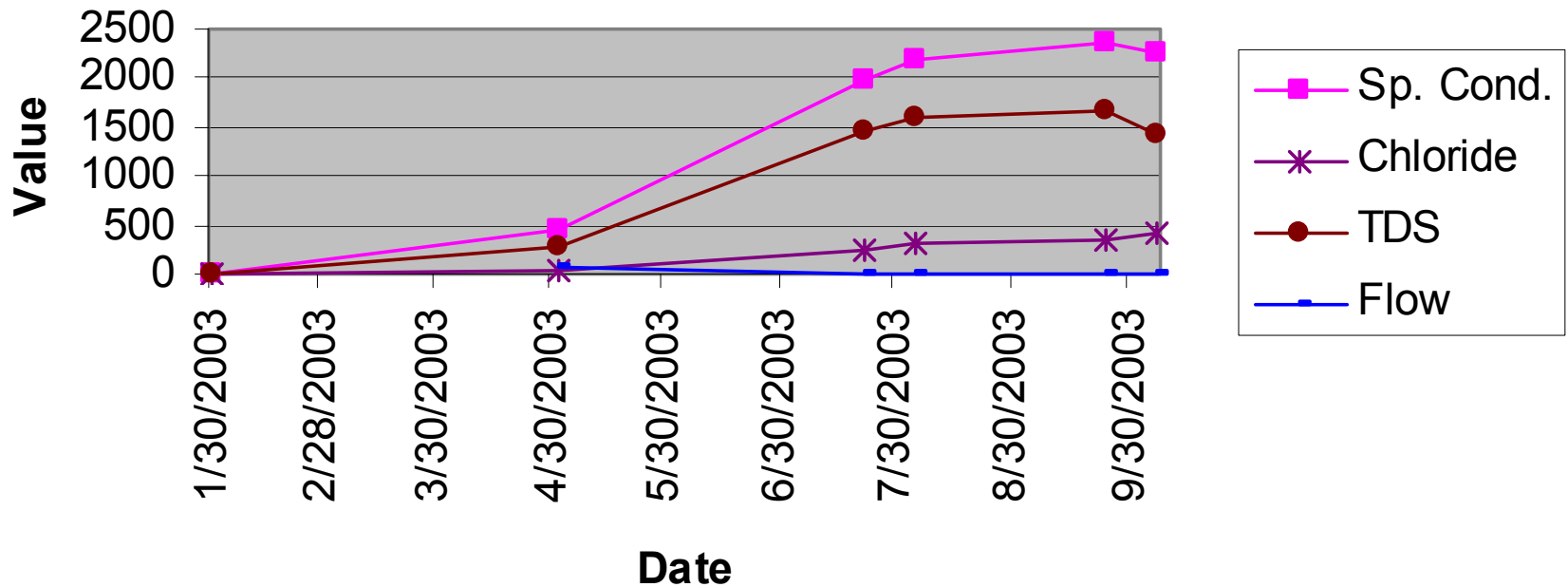
12169 - Elm Creek at Ballinger City Park



Station	Parameter	WQ Standard	Data Range		Mean
12169	Sp. Cond.	-	1306	1416	1361
	Chloride	610	180	240	210
	TDS	2000	840	1020	930

Summary Water Quality data for Colorado River

12207 - Elm Creek at County Rd 4 miles north of Ballinger

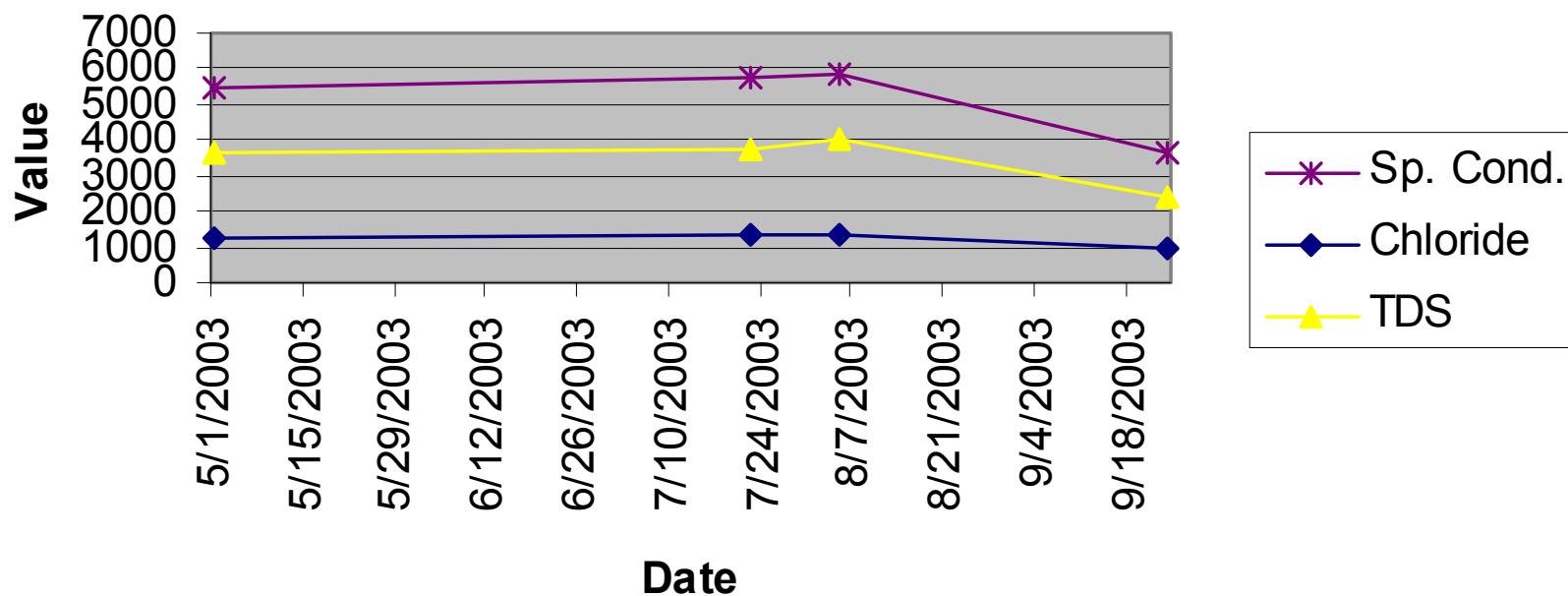


Station	Parameter	WQ Standard	Data Range		Mean
12207	Sp. Cond.	-	463	2410	1436.5
	Chloride	610	51	440	245.5
	TDS	2000	280	1740	1010



Summary Water Quality data for Colorado River

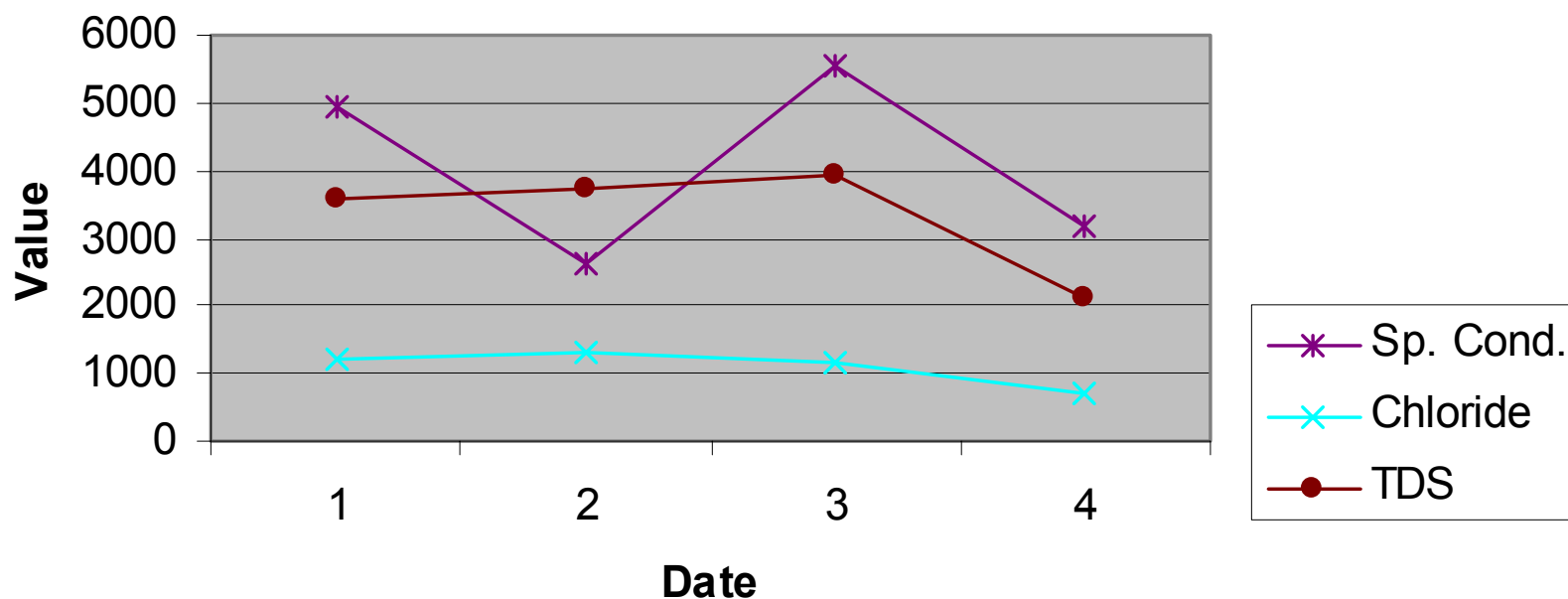
12430 - Colorado River at US 83



Station	Parameter	WQ Standard	Data Range		Mean
12430	Sp. Cond.	-	1153	5890	3521.5
	Chloride	610	150	1320	735
	TDS	2000	720	4040	2380

Summary Water Quality data for Colorado River

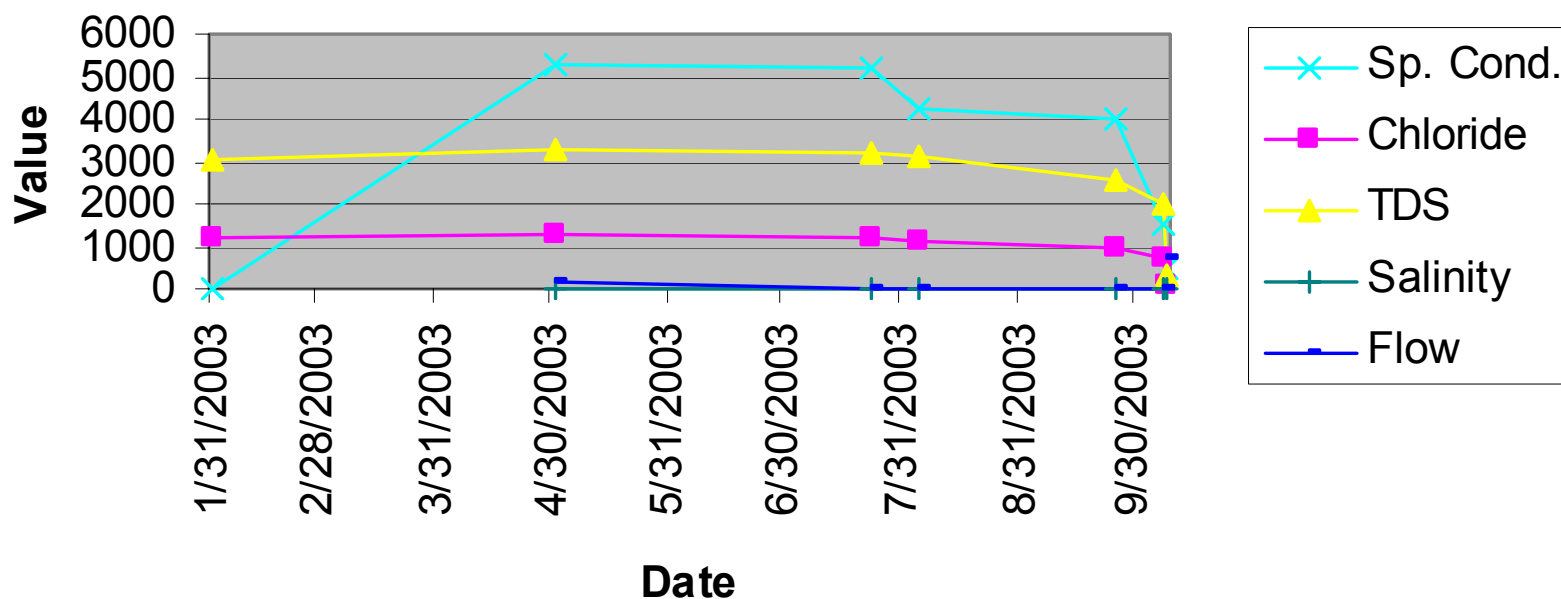
12431 - Colorado River at US 67



Station	Parameter	WQ Standard	Data Range		Mean
12431	Sp. Cond.	-	747	5560	3153.5
	Chloride	610	110	1310	710
	TDS	2000	460	3930	2195

Summary Water Quality data for Colorado River

12432 - Colorado River at US 277

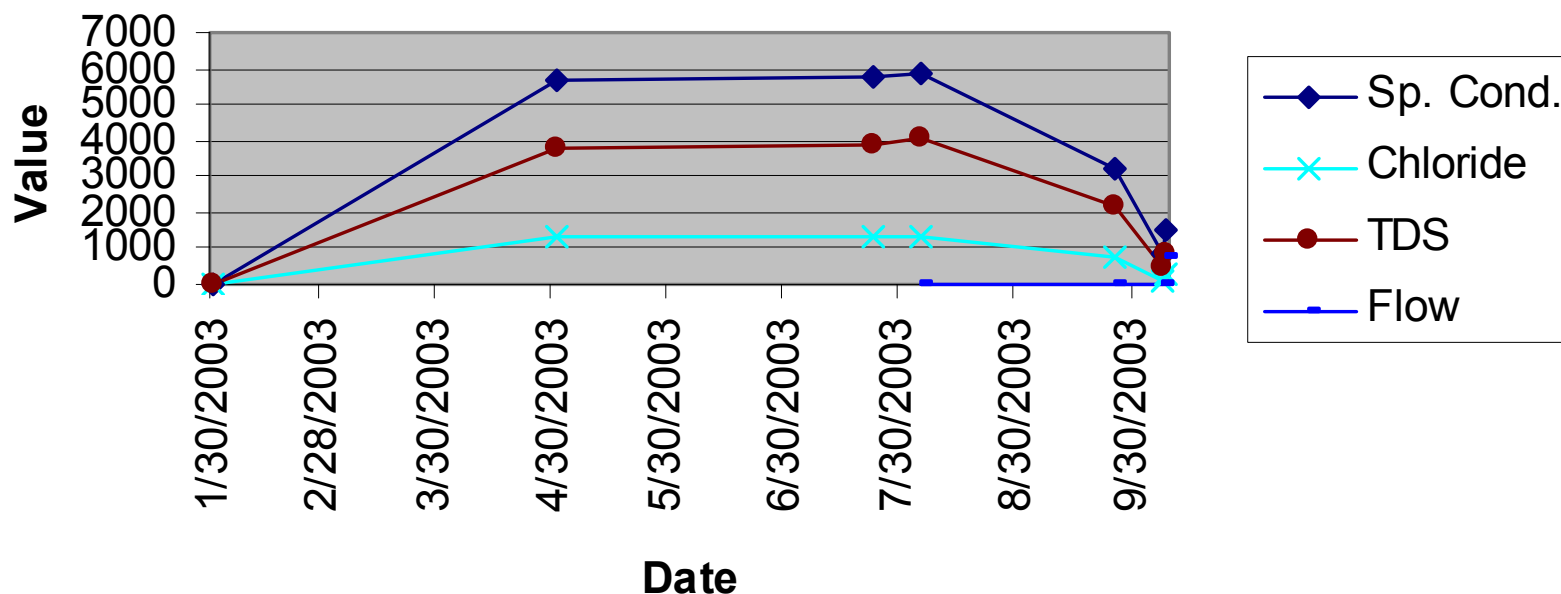


Station	Parameter	WQ Standard	Data Range		Mean
12432	Sp. Cond.	-	508	5250	2879
	Chloride	610	90	1250	670
	TDS	2000	340	3260	1800



Summary Water Quality data for Colorado River

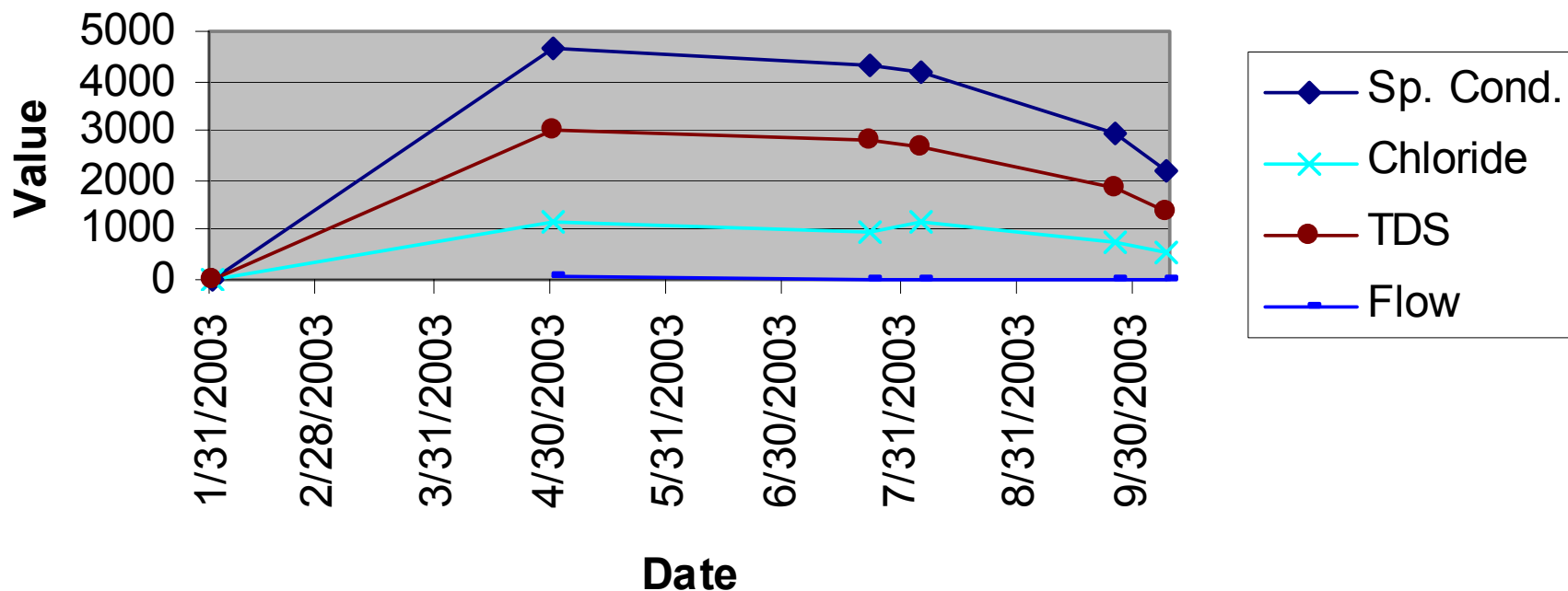
13651 - Colorado River at FM 2111



Station	Parameter	WQ Standard	Data Range		Mean
13651	Sp. Cond.	-	869	5880	3374.5
	Chloride	610	140	1320	730
	TDS	2000	510	4040	2275

Summary Water Quality data for Colorado River

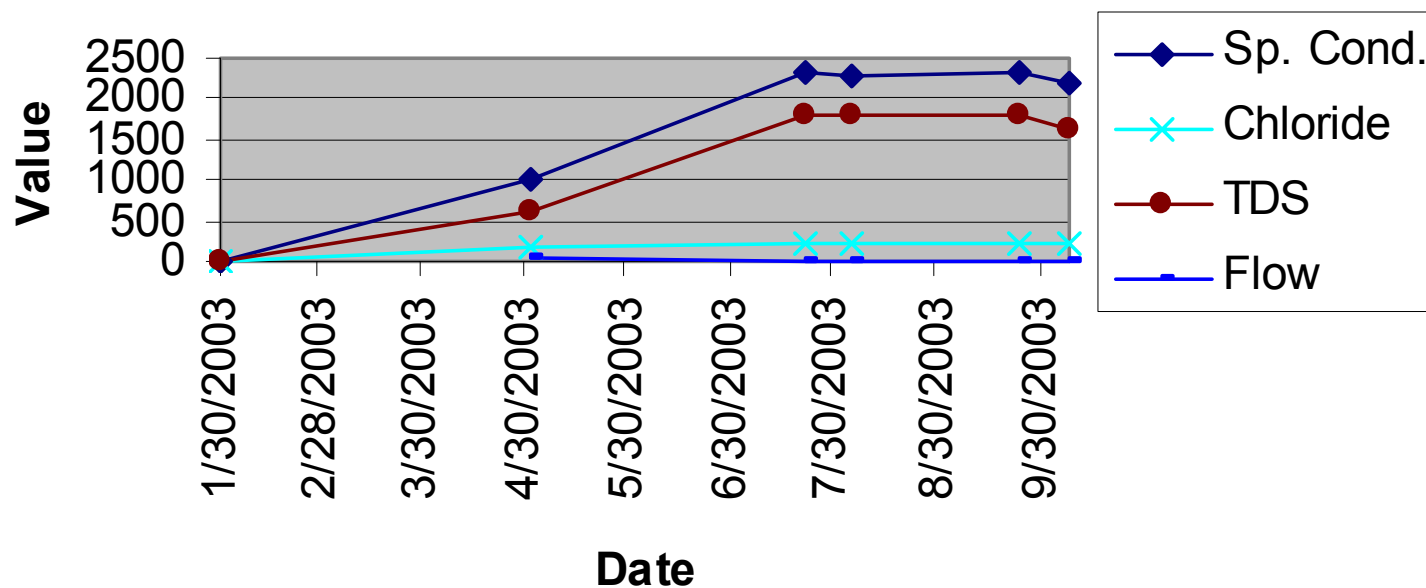
15147 - Colorado River downstream of City of Robert Lee



Station	Parameter	WQ Standard	Data Range		Mean
15147	Sp. Cond.	-	2222	4635	3428.5
	Chloride	610	540	1170	855
	TDS	2000	1370	2980	2175

Summary Water Quality data for Colorado River

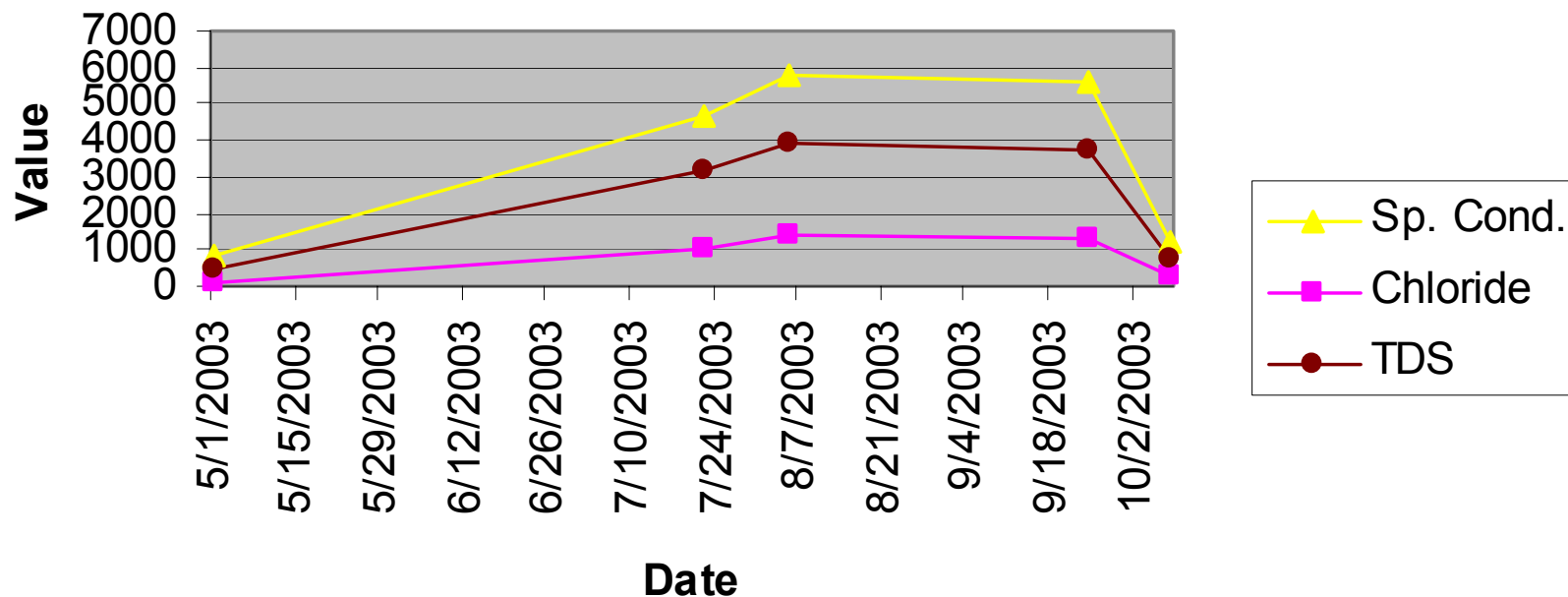
16899 - Coyote Creek at Runnels CR 342



Station	Parameter	WQ Standard	Data Range		Mean
16899	Sp. Cond.	-	1002	2430	1716
	Chloride	610	170	290	230
	TDS	2000	620	2020	1320

Summary Water Quality data for Colorado River

17244 - Colorado River at Blair Ranch



Station	Parameter	WQ Standard	Data Range		Mean
17244	Sp. Cond.	-	809	5800	3304.5
	Chloride	610	110	1370	740
	TDS	2000	480	3930	2205

Summary Water Quality data for Colorado River

Water Quality of the Cities in the watershed					
Station	Parameter	WQ Standard	Data Range		Mean
17654	Sp. Cond.	-	723	740	731.5
	Chloride	610	90	90	90
	TDS	2000	460	470	465
Station	Parameter	WQ Standard	Data Range		Mean
17655	Sp. Cond.	-	2454	2471	2462.5
	Chloride	610	340	350	345
	TDS	2000	1710	1730	1720
Station	Parameter	WQ Standard	Data Range		Mean
17656	Sp. Cond.	-	1664	1716	1690
	Chloride	610	350	350	350
	TDS	2000	1000	1010	1005
Station	Parameter	WQ Standard	Data Range		Mean
17657	Sp. Cond.	-	3091	3122	3106.5
	Chloride	610	700	780	740
	TDS	2000	1890	1900	1895

EA Contacts



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